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quite clear, and either contains no air-bladders, or, at all events, very irregular ones. These blue stripes are several feet in dimension, and in them are generally found "dirt bands" of foreign matters, such as stone, gravel, and clay, which the icebergs carry off embodied in them. The *blue* ice is, by thawing, dissolved into regular large grains, which is not the case with the *white* ice that forms the main mass of the icebergs. It seems probable that these blue stripes are formed by a filling up of the fissures in the *inland* ice with water—perhaps mixed with snow, gravel, and stones; and such a refrigeration of the water in the fissures may be supposed to be an important agency in setting in motion these great mountains of ice.\*

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XI.—On the Island of Ruad, North Syria. By Capt. WILLIAM ALLEN, R.N., F.R.S., F.R.G.S.

Read June 14, 1852.

THE power and prosperity of Tyre probably owed its rise to the simple advantage of an island, lying near a fertile coast, devoid of harbours. It is one among the numerous instances of what has been accomplished by the unfettered energies of a maritime people. Similar circumstances on the shores of northern Syria led to the same results. A colony of exiles from Sidon emulated the glories of Tyre in the little island of Aradus, the modern Ruad. Destruction here has not been so complete as at Tyre,—enough remains to testify to the boldness of the race, and to shadow forth the grandeur of its prototype in the South.

Although probably never so powerful as Sidon and Tyre, Aradus shared with them the honour of founding Tripolis, and its prosperity may be inferred from the description of Strabo, who says it was "*habitationibus plenum; tanta hominum multitudine ad hoc usque tempus, ut domus inhabitent multis fastigiis aptas.*"

I made a little survey of this island in the spring of the year 1851. It is situated in lat.  $34^{\circ} 49' 20''$  N., and long.  $35^{\circ} 51'$  E.† There are two little ports, occupying the whole of the eastern side of the island, or that facing the continent, about 400 yards in length. This is the only shelter from the prevalent S.W. winds and heavy seas, that have the length of half the Mediterranean to rouse themselves in, before expending their fury on this open coast.

The ports are formed by three piers or moles, showing more or less their ancient construction, but especially that in the middle,

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\* See Dr. Rink's late work, '*De Danske Handelsdistricter i Nordgrönland,*' with map. Copenhagen.—ED.

† According to Mr. Hooper, Master of H.M.B. "*Frolic.*"

which is nearly perfect, formed with blocks of sandstone 16 feet 6 inches long, and nearly 7 feet broad and deep, placed transversely. At the extremity of this pier are two stone bollards 8 ft. 8 in. in diameter. The whole length of the pier could not be ascertained, but the part projecting from the present water-line, measured for one little base, is 224 feet. The southern pier still also serves its purpose, but as it is occupied by a mosque, it could not be examined.

What remains of the North Mole is entirely ancient. In both ports, and continued round the middle pier, are traces of quays of concrete, now below the surface of the water, from which it may be inferred that a subsidence of the island has taken place at some period.

Stretching across the northern part of the island, from the base of the pier, is a fine bed of concrete, about 200 paces long by 150 broad, very nearly level, but declining towards the port, where its margin forms the quay. This concrete is continued round the west, in width about 35 paces, increasing very much towards the southern shore. The probable purpose of this was to gain space by an artificial increase of the size of the island, effected by levelling the summits of the rocks surrounding this part of it, the interstices being filled with the fragments, embedded in a concrete, as hard as the rock itself, which it perfectly resembles. In some places, instead of the fragments, are numerous small squared stones laid side by side in the concrete. The broad inclined plane was probably the arsenal, and where vessels were hauled up for better security during bad weather.

Along the three *outer* sides of the island are gigantic vestiges of the ancient walls, which in two places have, still standing, five or six courses of stones, measuring 15 and 18 feet in length, lying transversely, and forming the thickness of the wall. On the west side, the wall to the height of 8 or 10 feet is cut in the solid rock. On this side, only, to seaward the rocks have been cut so as to have the appearance of a moat and glacis, or outer wall, to break the force of the waves in the most exposed part. These could not easily be measured, but the moat is nearly 30 feet wide. There was no time for conjecture on the spot, but reflecting afterwards on this curious feature, and on the existence of a culvert, about a foot and a half wide, found in the concrete, leading from, and through the wall, with a slight declination towards the port, I conceived the idea that it might have been intended for the purpose of sluicing and cleansing it, as there is here hardly any tide.

The central and original part of the island is nearly covered by the modern town, which has wonderfully increased within the last century. Pococke, who was here in 1738, found "very few houses except in the castles." I found these occupied by a formidable garrison of the gentle sex, who resolutely opposed

my attempts at taking a round of angles, from the central tower. Fifty years after Pococke's visit, Volney says, "there does not remain a single wall, of that crowd of houses which, according to Strabo, were built with more stories than those of Rome itself." An old man told me there were but very few houses when he was a child, and he had heard that a hundred years ago there were only five; now he asserted there are about 500, which is an over estimate, but they are much crowded in one part of the town.

There is here an appearance of bustle, and it is evident that some portion of the energy of the ancient Aradians has descended to the present inhabitants, which may give them claim to be considered as their posterity. In support of this may be adduced the manifest propensity of the boys of Ruad, which is entirely nautical. They all amuse themselves with ship building. Their tiny vessels are very neatly made, rigged, painted, and pitched. Moreover they carry their mimic labours to a legitimate result, by always sailing their little argosies well freighted.

These early indications of a love of enterprise have their full development in the men, who are all sailors, or employed in ship building, which would be very profitable, if it were not for the absurd restrictions of the Turkish Government, which will only allow vessels of very limited tonnage to be built; and although five of large size, which I saw on the stocks, would prove that the law is either evaded or relaxed, it is most likely the result of bribery, and must be vexatious in any case.

Twenty-eight vessels, of small size, were lying in the south port, which appears to be more frequented on account of the greater number of houses near it, although the other is deeper and more secure.

As no part of the island is available for cultivation, supplies of provisions come from the mainland, about half a mile distant, which must have been the case with the ancient Aradians.

Water is at present obtained from cisterns under the houses, and some excavations would show that the same expedient was formerly adopted, though Strabo describes, very circumstantially; a submarine source of fresh water, "in the strait a little before the city;" with the ingenious method by which the islanders obtained it pure, in the midst of the salt water. The present race appear to be ignorant of this treasure.

The roads of Ruad will probably be found serviceable, as shelter for ships on this dangerous coast, as commerce is increasing, and it would be a very good station for a coal dépôt. The position and soundings will be well known by the excellent survey made by Mr. Hooper, under the orders of Commander Vansittart, of H.M. Brig "Frolic."

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